

STRUCTURE OF THIS MICROCARD (BASIC INSTRUCTIONS)

A02 = How to use this microcard		1	2	3	4
A01 = Structure of microcard				SIS	
B01 = Trouble-shooting chart	A	***X*	X*XXX	XXXXX	XXXXX *XXXX X
	B	*XXXX	XXXXX	XXXXX	XXXXX XXX
	C	XXXXX	XXXXX	XXXXX	XXXXX XXX
	D	XXXXX	XXXXX	XXXXX	XXXXX XXX
	E	XXXXX	XXXXX	XXXXX	XXXXX XX
	F	XXXXX	XXXXX	XXXXX	XXX
	G	XXXXX	XXXXX	XXXX	
	H				
	J				
	K				
	L				
	M				
N01 = Service information	N	*XXXX	XXXXX	XXXXX XXX	*X XX*
		12345	67890	12345 67890	12345 678
			1	2	
					Index

N28 = Table of contents and publication information

- 1 = Special features
- 2 = Safety and precautionary measures
- 3 = Testers and tools
- 4 = Installation position of components

- a. Read from left to right.
- b. Title of micropicture (appears on each micropicture).

E16	Product/component/test step	
	Coordinate	

c. Limits of section

Beginning	Mid-section	End	One-page section

A01		=> <=
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HOW TO USE THE MICROCARD

Trouble-shooting instructions for

System: ASR2-DKZ/MSR

Descriptions, photos, terminal designations, and special features refer to the following vehicle:

BMW 735i , 8.87->

These basic instructions are comprehensive trouble-shooting instructions. They must not be used as vehicle-specific instructions. Caution! Descriptions and photographs may deviate from the vehicle-specific brief instructions.

Mandatory set values, terminal assignments and special features should be taken from the vehicle-specific brief instructions only. For brief instructions, see table of contents Microcard KFZ-00..

A02		=> <=
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SPECIAL FEATURES

Electronic traction control (ETC) combined with ABS 2.

BMW designation ASC = Automatic Stability Control.

Joint controller with 55-pole plug for ABS and ETC.

ETC control influences Motronic and electronic accelerator pedal.

A special adapter lead is required for test purposes. The adapter lead has 2 pin terminals: one for connection to the ABS 2-LED tester for ABS testing and a second terminal for connection to the universal test adapter for ETC testing.

As of approx. mid-90 modified ASR lamp concept.

Indication by way of Check Control display and gong replaced by ASR indicator lamp in instrument panel.

SAFETY AND PRECAUTIONARY MEASURES

ABS/ASR is fundamentally maintenance-free, however, the following must be observed whenever working on vehicles with ABS/ASR systems:

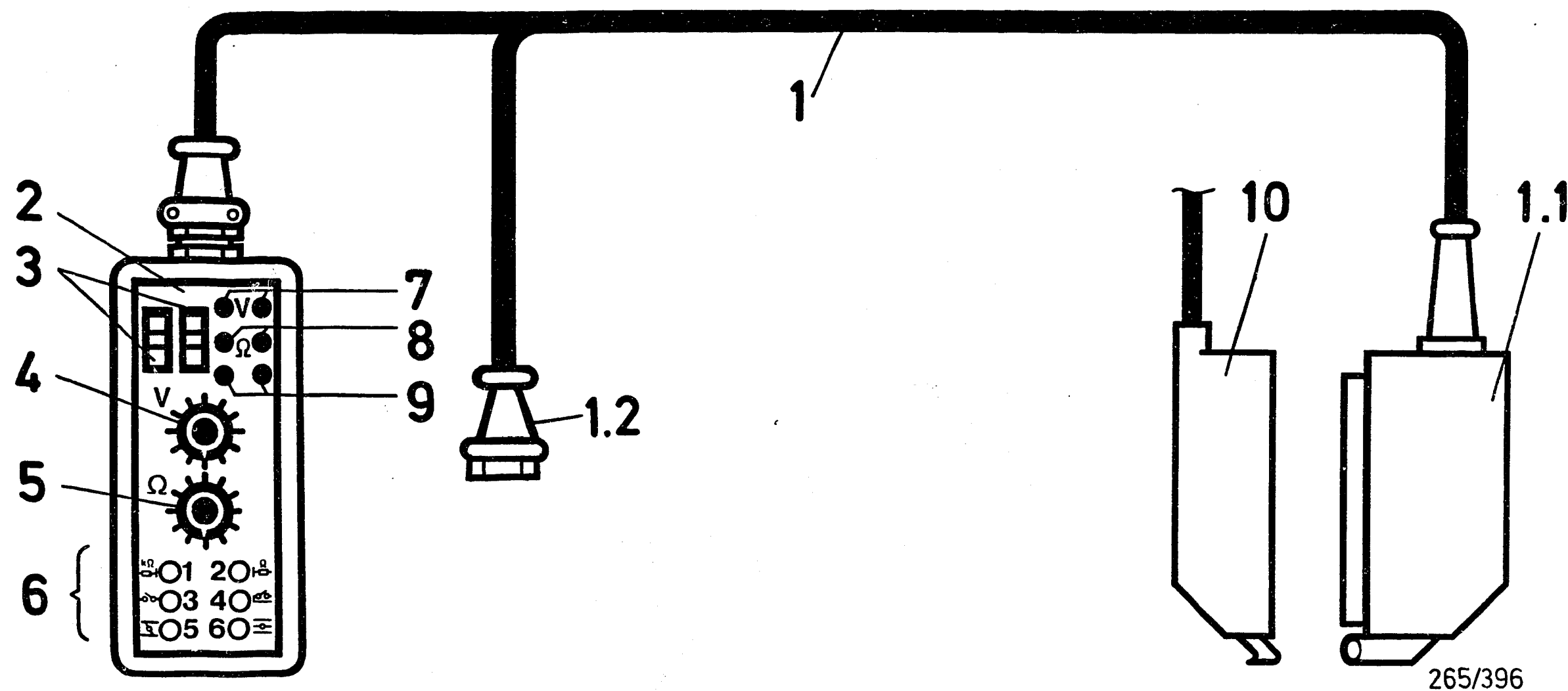
1. When welding with an electrical welding unit, disconnect plug from electronic controller.
2. Whenever paint spraying a vehicle, the electronic controller may be loaded briefly to a max. of + 95° C and for a short period (approx. 2 hours) to a max. of + 85° C.
3. After exchange of the hydraulic modulator, the controller, the wheel-speed sensors or the wiring harness, and after work in which the ABS/ASR assemblies have been touched (e.g. repair work), the complete ABS/ASR system must be checked.
Make sure that the brake lines, wheel-speed sensor connections on the controller, and the wheel-speed-sensor plug-in connections are assigned correctly (see vehicle-specific terminal diagram).
4. Whenever work has been carried out on the brake system, the system must be bled and a high-pressure test be conducted.
All junctions must be tested for leakages.
5. Firmly secure the battery terminals to the terminal posts of the battery.
6. Do not use a fast charger for starting the engine.
7. Never disconnect the battery from the vehicle electrical system when the engine is running.

**SAFETY AND PRECAUTIONARY MEASURES
(CONTINUED)**

- 8. Disconnect the battery from the vehicle electrical system before boost charging.
- 9. Make sure that all of the connectors of the wiring harness are seated properly.
- 10. Never disconnect the ABS wiring-harness plug from or connect it to the controller when the ignition is switched on.
- 11. Before testing on the chassis dynamometer and on the brake test bench, disconnect the ABS/ASR controller plug.
- 12. The vehicle may be towed with the front axle raised only when the ignition is switched off.

TEST EQUIPMENT AND TOOLS

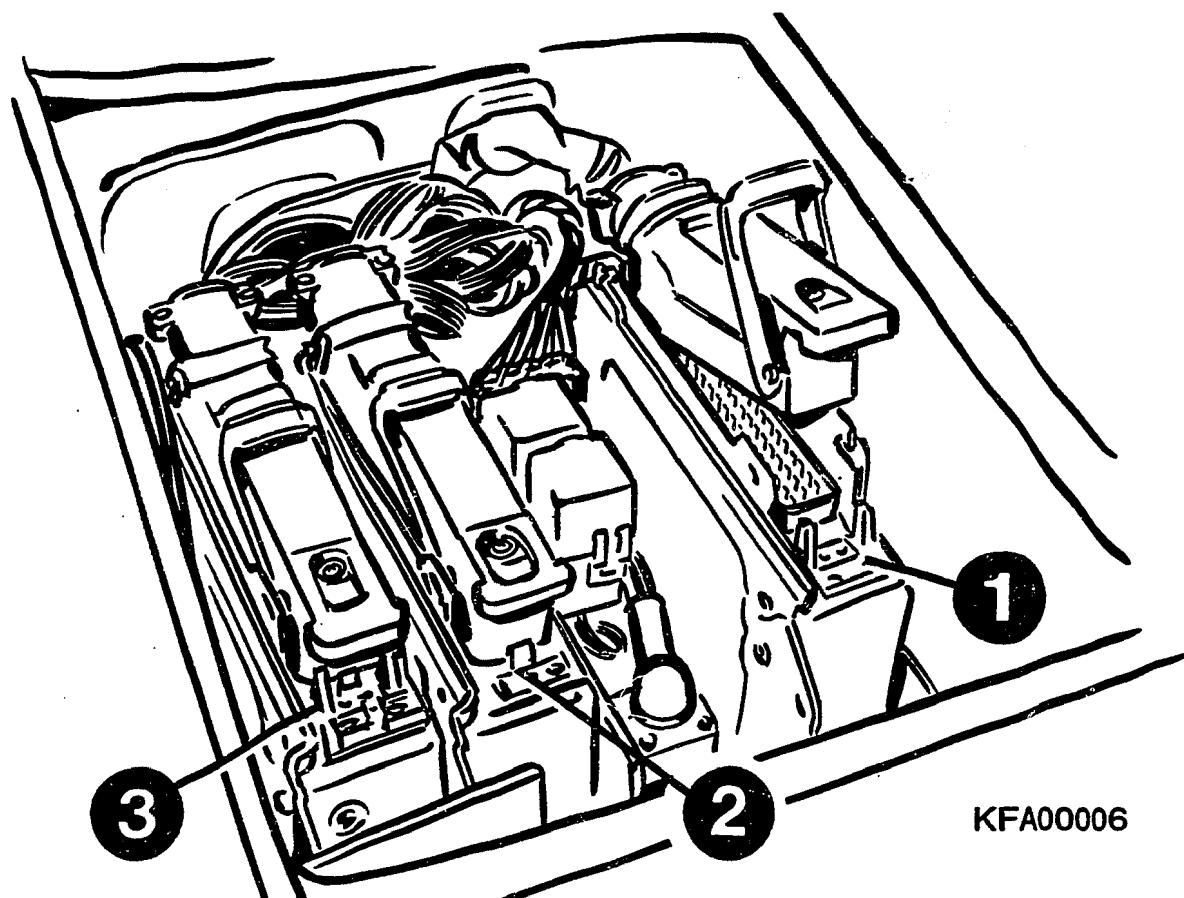
Description	Designation	Part number
ABS 2 LED tester	KDAS 0003	Order from: Robert Bosch GmbH KH/VKD 3 Postfach 41 09 60 D-7500 Karlsruhe 41
Adapter lead for ABS and ASR	ASR2-DKZ/MSR	1 684 463 200
Universal test adapter for ASR test	ETT 018.01	0 684 101 801
Multimeter	MD 301	0 684 500 301
Grease for wheel-speed sensor		Molykote Longterm 2



- 1 = Adapter lead (1 684 463 200)
- 1.1 = Connection to wiring harness
- 1.2 = Connection to ABS 2 LED tester
- 2 = Universal test adapter
(0 684 001 801)
- 3 = Measuring recess (for motortester)
- 4 = Program-selector switch "V"
- 5 = Program-selector switch "Ω"
- 6 = Keypad for simulation of operating conditions

- Push-button 1 = NTC II (engine), cold (-20°C)
- Push-button 2 = NTC II (engine), warm ($+80^{\circ}\text{C}$)
- Push-button 3 = Pump activation
- Push-button 4 = Tank-ventilation valve
- Push-button 5 = Not used
- Push-button 6 = Not used
- 7 = Measuring sockets (voltage measurement)
- 8 = Measuring sockets (resistance measurement)
- 9 = Used only for self-diagnosis
- 10 = Wiring harness

UNIVERSAL TEST ADAPTER WITH ADAPTER LEAD



KFA00006

- 1 = ABS/ASR controller
- 2 = E Gas (elec. accel.-pedal) control unit
- 3 = Motronic control unit

INSTALLATION POSITION OF COMPONENTS

ABS/ASR controller (Item 1):

In the engine compartment beneath the hood.
Unscrew cover.

Remove plug:

Fold up unlatching clip and unhook plug on the wiring-harness side from the mechanical encoding unit.



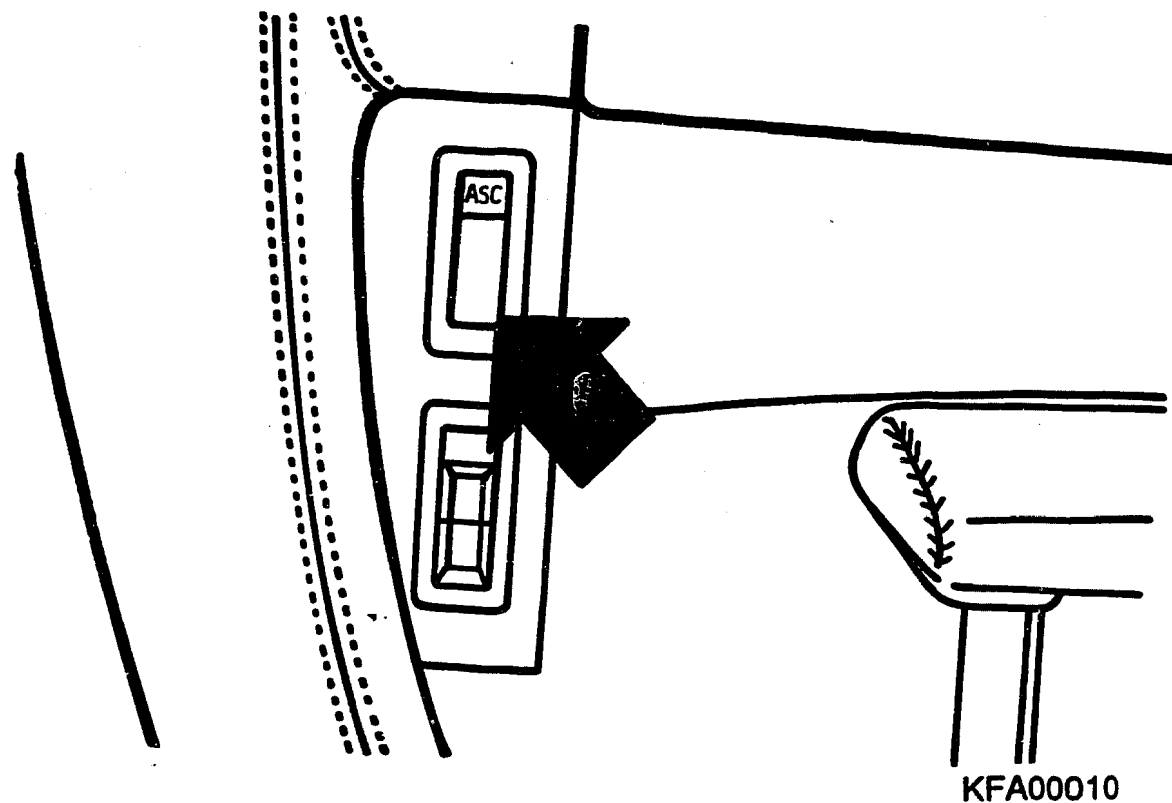
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- 1 = Overvoltage-protection relay

INSTALLATION POSITION OF COMPONENTS (Continued)

Overvoltage-protection relay:

In the fuse and relay box. Relay box in the engine compartment on the left-hand side in front of the firewall.



Arrow = ASR repeater lamp and ASR nonlocking switch

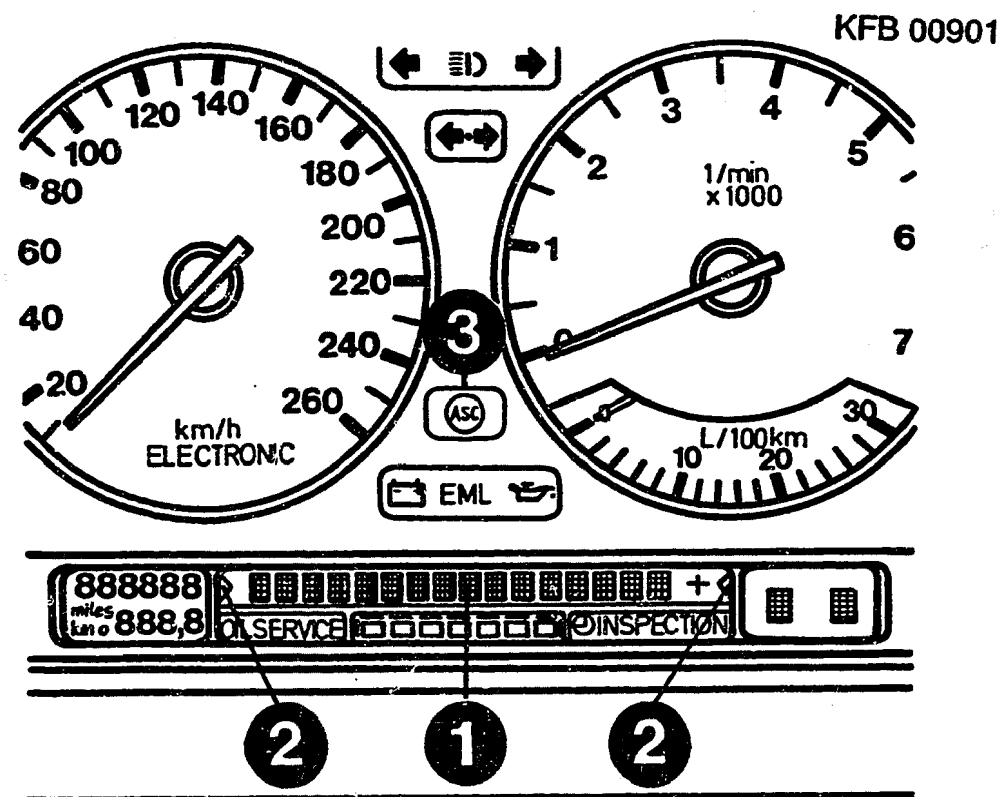
INSTALLATION POSITION OF COMPONENTS (Continued)

ASR repeater lamp and ASR nonlocking switch:
In the passenger compartment in the center console.

ASR warning indication and ASR information
via check control in instrument panel.

Ground terminal:
In the engine compartment at the control-unit
box on the left-hand side beneath a cover.

For production reasons:
continued on the following
coordinate.



- 1 = Check-control indicator (not as of approx. mid-90)
- 2 = Indicator lamp
- 3 = ASR indicator lamp (as of approx. mid-90)

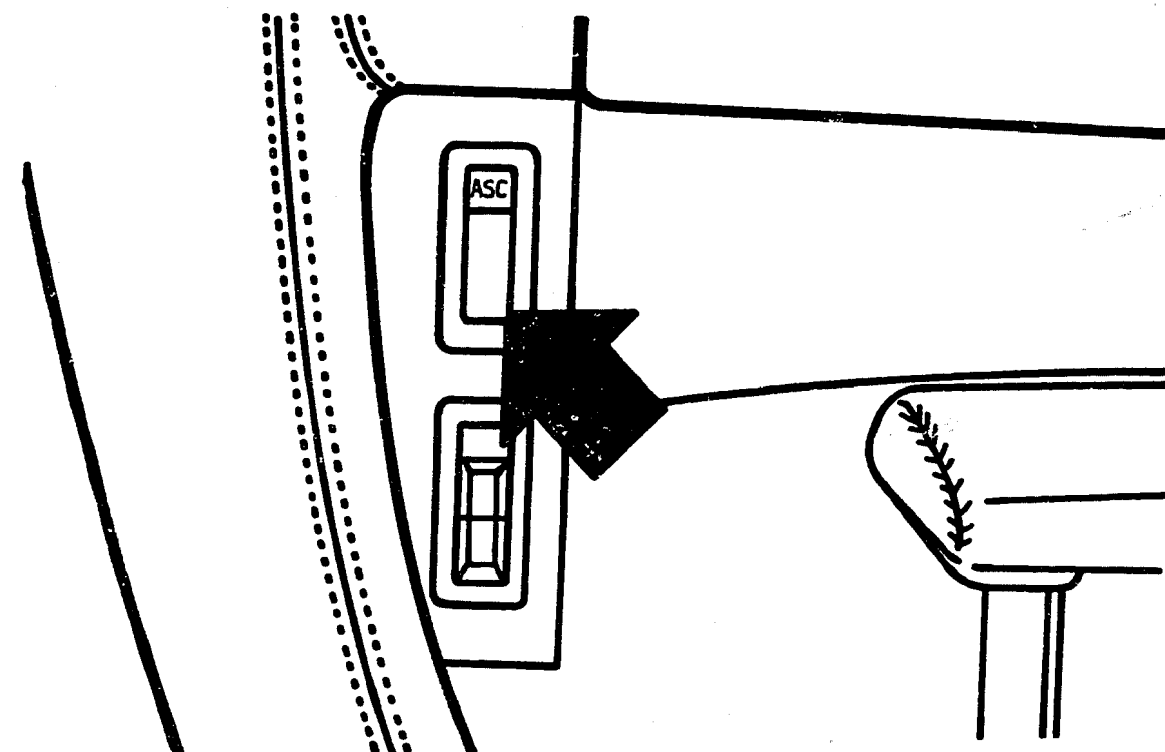
ASR repeater lamp, ASR nonlocking switch and ASR check-control indicator:

The ASR is ready for operation and the repeater lamp in the switch lights up each time the engine is started.

Whenever ASR is in operation, the repeater lamp flashes and check control indicates "ASC". The gong sounds and indicator lamp flashes.

If the ASR is defective, the repeater lamp goes out and the check control indicates "ASC defective" for a limited time. Indicator lamps light up.

Without ASR the vehicle is operational as usual. ABS continues to operate if the ABS warning lamp does not light up.



Arrow = Push-button for ASR (ASC)

If necessary, the ASR may be switched off by pressing the push-button "ASC". When the ASR is switched off, the repeater lamp goes out. On pressing the push-button again, the ASR is returned to operating mode. Repeater lamp lights up.

Modified ASR lamp concept (as of approx. mid-90):
The system becomes operative whenever the engine is started. The ASR indicator lamp in the instrument panel goes out after starting the engine. ASR control causes the ASR indicator lamp to flash. The ASR indicator lamp lights if ASR is defective.
ASR can be deactivated if required with the "ASC" button. The indicator lamp lights when ASR has been switched off. Pressing the button again reactivates the ASR. ASR indicator lamp goes out.

When rocking backwards and forwards or driving off in deep snow or on a loose road surface, and when driving with snow chains, it is advisable to switch off the ASR.

TEST PROCEDURE

A special adapter lead is required for testing.

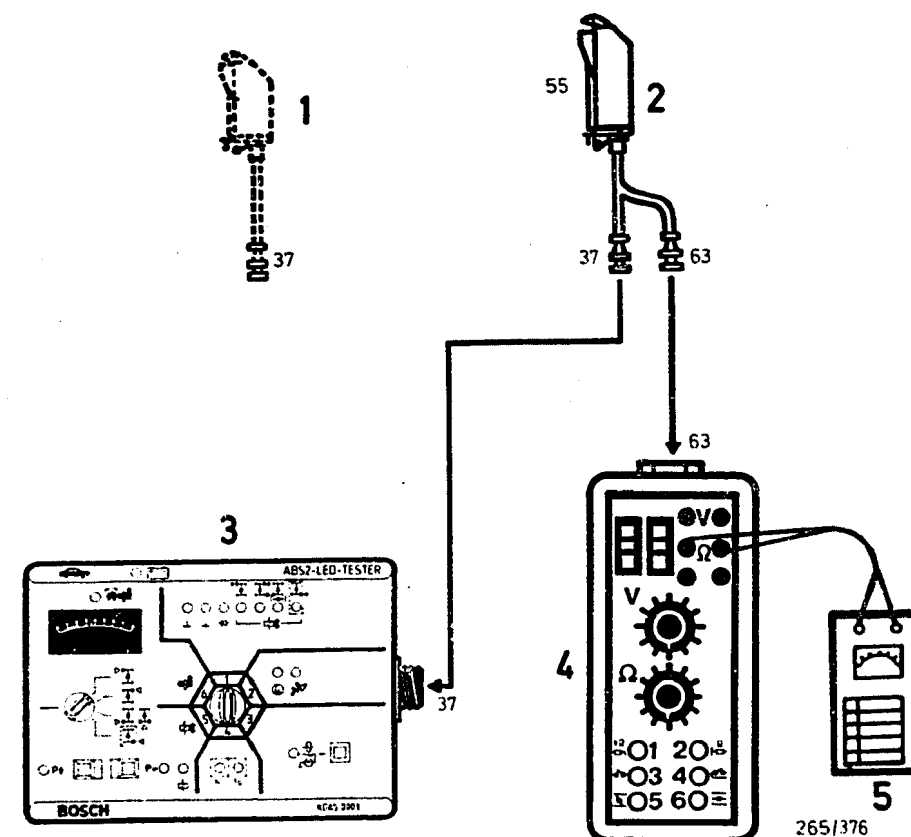
First of all, if working on a BMW, call up the ASR flashing code, if available.

Afterwards, the ASR part is tested using the universal test adapter. To do this, the adapter lead with the 63-pin plug-in connection must be connected to the universal test adapter.

The ABS part is then tested with the ABS LED tester, even if the ABS warning lamp does not light up. For this purpose, the adapter lead with the 37-pin terminal must be connected to the ABS tester.

Both testers can be connected at the same time.

If no fault is detected, continue by testing the E Gas system.



- 1 = Adapter lead for ABS 2 LED tester, 35-pin (is not required)
- 2 = Adapter lead for ABS/ASR, 55-pin
- 3 = ABS 2 LED tester (tests ABS 2 part)
- 4 = Universal test adapter (tests ASR part)
- 5 = Multimeter

TEST REQUIREMENTS

*ABS/ASR is a system for vehicle safety. Working on this system requires detailed knowledge of the system.

*Regulatory tire size fitted?

*To make sure of good handling characteristics, use only tires of the same make and tread pattern. Pay attention to the information given in the owner's manual.

HOW TO USE THE SELF-DIAGNOSIS AND SELF-DIAGNOSIS TEST TABLE

Installed in this vehicle is a controller which is equipped with a self-diagnosis facility. Therefore, trouble-shooting must always be begun with self-diagnosis.

Activation of the self-diagnosis is described starting on coordinate B 07.

The self-diagnosis test table beginning on coordinate B 11 contains:

- fault indication (flashing code)
- components or system functions tested
- test instructions/test conditions
- terminals
- set-value details
- coordinate details for trouble-shooting and elimination of faults.

If the self-diagnosis facility indicates a fault, but there is no system or component fault present, the controller must be replaced.

If no more faults specific to the system are indicated by the self-diagnosis facility and the customer complaint (symptom of trouble) has still not been eliminated, trouble-shooting must be continued starting on coordinate B 13 using the universal test adapter.

Note:

Flashing code is valid only for control units with blue nameplate. Controllers with a yellow nameplate do not have a flashing code. In this case, begin testing with test adapter.

For production reasons:
continued on the following
coordinate.

SELF-DIAGNOSIS

Fault lamp = ASR repeater lamp

The indicator lamp in the center console lights up when the ignition is switched on.

Start engine:

- 1.Repeater lamp stays lit.
- 2.Repeater lamp goes out if ASR nonlocking switch is activated or in the case of a fault. ASR is not operating.
- 3.In ASR mode, the repeater lamp flashes at 3 Hz.
- 4.In the case of a fault (repeater lamp is not lit), evaluate flashing code.

As of approx. mid-90 fault lamp = ASR indicator lamp in instrument panel.

Start engine:

- 1. Indicator lamp goes out.
- 2. Indicator lamp lights if ASR button is pressed or in the event of a fault. ASR is deactivated.
- 3. Indicator lamp flashes in ASR mode.
- 4. Evaluate flashing code in the event of a fault (indicator lamp lights).

Activating the self-diagnosis.

+Ignition off.

+Activate ASR nonlocking switch and brake pedal simultaneously.

+Keep nonlocking switch activated and switch on ignition.

+Keep nonlocking switch activated for at least 1 further second after switching on the ignition. Then release ASR nonlocking switch and brake pedal.

+Repeater lamp starts to flash approx. 3 seconds after the ignition is switched on.

Evaluating the flashing code.

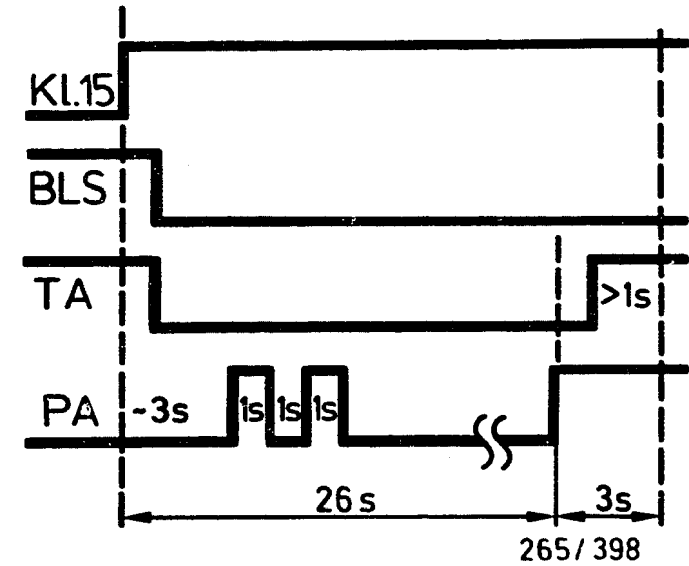
The number of flashing pulses corresponds to the fault number: e.g., one flashing pulse means fault number 1, two flashing pulses means fault number 2, etc.

Output of the fault always takes 26 seconds, irrespective of which fault is output. At the end of fault output, the ASR repeater lamp lights up briefly.

Only one fault is stored and indicated.

To repeat the fault output, stimulation must be renewed.

If the engine is started while a fault is being output, the controller discontinues fault output.



- Term. 15 = Voltage from driving switch term. 1
- BLS = Stop-lamp switch
- TA = ASR nonlocking switch
- PA = ASR repeater lamp, fault code 2
- s = Seconds

Clearing the fault memory

- + Immediately at the end of fault output (ASR repeater lamp lights up), press ASR nonlocking switch for at least 1 second.

Or:

- + Disconnect controller.

Or:

- + Disconnect vehicle battery.

A t t e n t i o n :

Fault codes of other control units are cleared as well whenever the battery is disconnected!

For production reasons:
continued on the following
coordinate.

SELF-DIAGNOSIS TEST TABLE
for BMW ASR2-ASC/MSR

Fault indication Flashing code	Testing of component/function	Test instructions/Test conditions	Terminals	Set values	Coordinate
1	No fault stored		—	—	—
2	E Gas control unit, functions: throttle- valve setting, reduc- tion, increase. Lead to term. 47. Motronic control unit, functions: overrun cut-off, spark-advance- angle adjustment.	Test with universal test adapter.	43,46 47,48	—	B 25 B 27 C 01 C 13
3	Motronic control unit. Function: ign. masking	Test with universal test adapter.	45	—	C 11
4	Wheel-speed sensor, rear left	Conduct signal test with ABS LED tester.	30,29	0,6...1,6 k Ω	—
5	Wheel-speed sensor, rear right	Conduct signal test with ABS LED tester.	10,28	0,6...1,6 k Ω	—
6	Wheel-speed sensor, front right	Conduct signal test with ABS LED tester.	13,12	0,6...1,6 k Ω	—
7	Wheel-speed sensor, front left	Conduct signal test with ABS LED tester.	8,26	0,6...1,6 k Ω	—
8	Lead to term. 45	Test with universal test adapter.	—	—	C 11
9	Motronic control unit. Function: ignition signal term. 1	Test with universal test adapter.	38	—	B 23
10	ABS/ASR controller	Exchange ABS/ASR controller.	—	—	—

HOW TO USE TEST CHART FOR UNIVERSAL TEST ADAPTER

- * Before testing, check all multiple plug-in connections for loose contacts.
- * Clean soiled or corroded plug contacts.
- * Look out for receptacles which are pushed back. If necessary, bend back locking lug and press receptacle into plug housing to the stop; locking lug latches home.
- * Suspicion of cable break (positive or negative conductor) at kinked or pinched points.

Connect adapter lead.

The peripherals are tested, and, if provision is made, also the control unit.

A multimeter for the measurement of voltage and resistance and/or a motortester is to be connected to the universal test adapter for the detection of measured values.

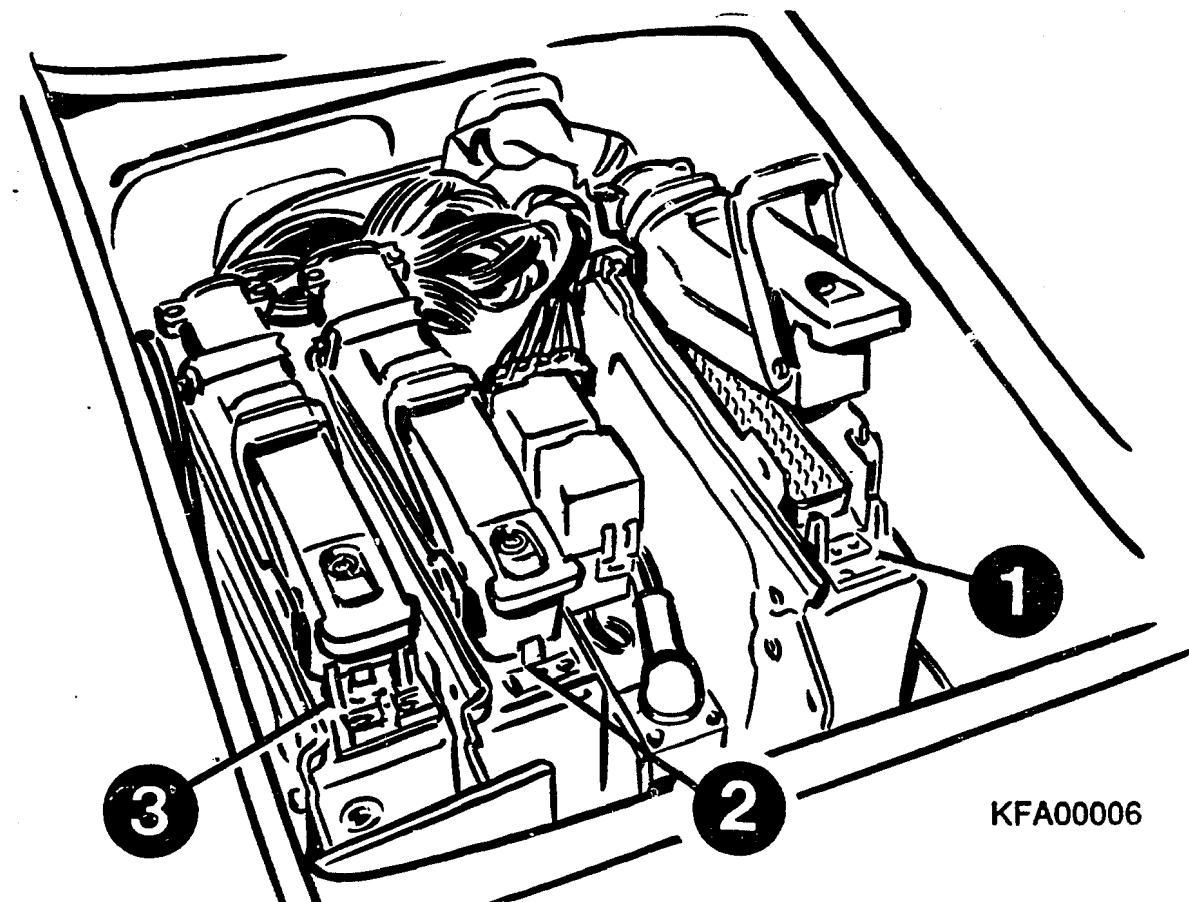
The test must always be carried out in full, starting at test step 1, in the specified sequence.

TEST SEQUENCE:

1. The individual test steps follow on from each other.
Example: if in one test step the ground connection for the control unit is tested, this test is not repeated again in the further test steps.
2. If the set value is not obtained in a test step, after rectification of the fault the test step must be repeated.

Note:

In the following test steps, the additionally boxed-in sections of the text indicate which operation is to be changed in comparison with the preceding test step.



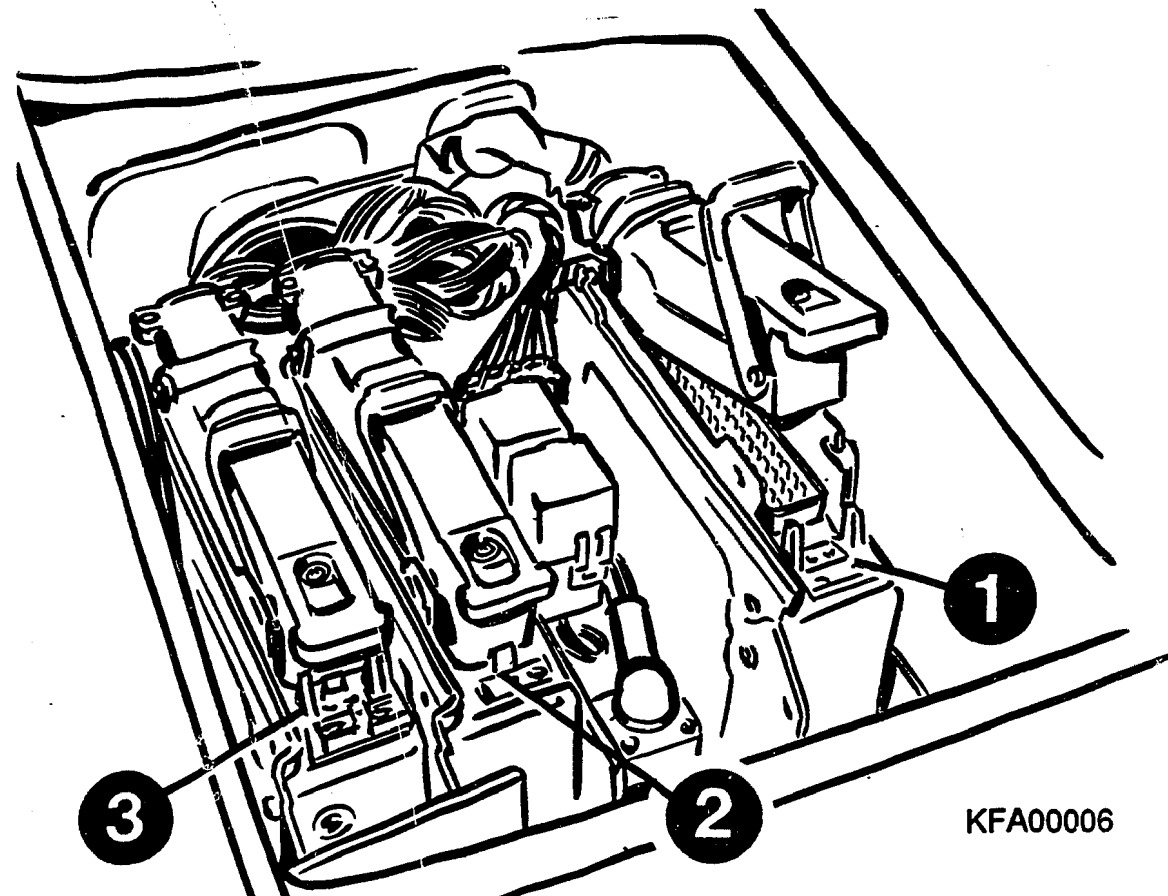
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- 1 = Controller for ABS/ASR
- 2 = Control unit for E Gas
- 3 = Control unit for Motronic

- * Connect universal test adapter to ABS/ASR wiring harness.
Control unit is located in the engine compartment on the right-hand side in the auxiliary-unit area. Unscrew cover.

CAUTION!

Disconnect and connect controller only when the ignition is switched off.



- 1 = Controller for ABS/ASR
- 2 = Control unit for Motronic
- 3 = Control unit for E Gas

Remove controller plug:
Lift up unlocking clip and unhook plug on
wiring-harness side from mechanical encoder.

Caution!

Do not run with tester connected!

After any repair work, the complete test
program must be repeated.

General information on trouble-shooting:

Test all leads for short circuit to ground
and contact with positive cables and watch
for worn and pinched cable insulation.

For production reasons:
continued on the following
coordinate.

Component/function:
Shielding of the ignition cable

N>

* Operation:

	Position
Prog.-selec. switch	V <div>==></div>
Prog.-selec. switch	Ω <div>1</div>
Test button	<div>—</div>

* Measuring equipment:
Motortester or multimeter

* Measuring range:
x 10 Ω

* Connection:
Blue test sockets ohms

* Operation in vehicle:
Ignition off

* Set value:
0...10 Ω

—

Is measured value within
set-value tolerance?

* Trouble-shooting:
For testing, disconnect
controller plug from test
adapter.

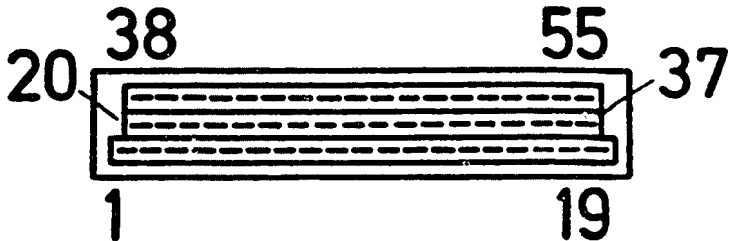
Test following leads with
ohmmeter for continuity,
set value 0 Ω :

* From controller plug
term. 41 to controller
plug term. 3 .

* From controller plug
term. 3 to controller
plug term. 18 .

* From control plug
term. 18 to vehicle ground.

Eliminate open circuits/contact
resistances.



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Plan view of 55-pin control-unit plug

Component/function:
Voltage supply for
controller

N>

* Operation:	Position:
Prog.-selec. switch " V "	4
Prog.-selec. switch " Ω "	1
Test button	—

* Measuring equipment:
Motortester or multimeter

* Measuring range:
min. 15 V

* Connection:
Measuring socket, red (+)
Measuring socket, black (-)

* Operation of vehicle:
Ignition off

* Set value:
< 0,5 V

* Operation in vehicle:
Ignition on

* Set value:
10.3...15 V

Is measuring value within
set-value tolerance?

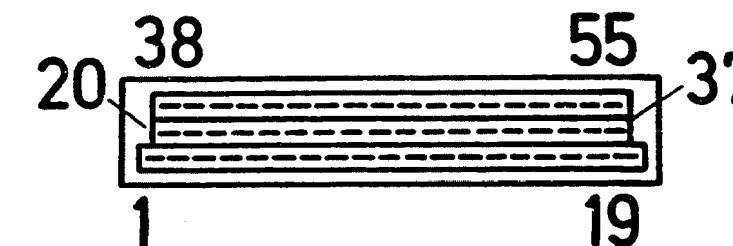
* Trouble-shooting:
For testing, disconnect
controller plug from test
adapter.

Test following leads with
ohmmeter for continuity,
set value 0 Ω :

- * From controller plug
term. 1 to overvoltage-
protection relay term. 87 .
- * From overvoltage-protection
relay term. 15 to driving
switch term. 15.
- * From overvoltage-protection
relay term. 30 to
battery term. + .
- * From overvoltage-protection
relay term. 31 to vehicle
ground.

Eliminate open circuits/contact
resistances.

- * Overvoltage-protection relay
defective: exchange.



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Plan view of 55-pin control-
unit plug

Arrow = Overvoltage-protection relay



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Continued on next picture page

Component/function:
Signal from handbrake

N>

* Operation:	Position:
Prog.-selec. switch " V "	3
Prog.-selec. switch " Ω "	1
Test button	—

* Measuring equipment:
Motortester or multimeter

* Measuring range:
min. 15 V

* Connection:
Measuring socket, red (+)
Measuring socket, black (-)

* Operation in vehicle:
Ignition on, release hand brake.

* Set value:
See brief instructions

* Operation in vehicle:
Ignition on, pull on hand brake.

* Set value:
< 0.5 V

Is measured value within
set-value tolerance?

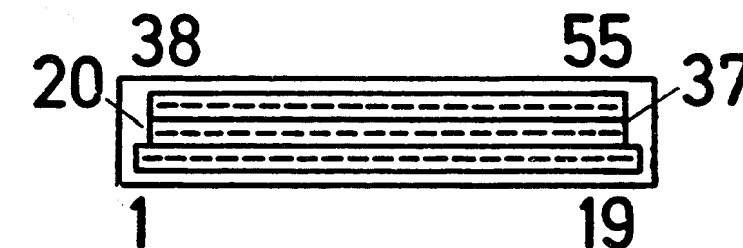
* Trouble-shooting:
For testing, disconnect controller plug from test adapter.

Test following leads with ohmmeter for continuity, set value 0 Ω :

- * From controller plug term. 52 to hand-brake indicator lamp.
- * From hand-brake indicator lamp to term. 15.
- * From controller plug term. 52 to hand-brake switch.
- * From hand-brake switch to vehicle ground.

Eliminate open circuits/contact resistances.

- * Hand-brake indicator lamp defective.
- * Hand-brake switch defective.
- * Adjust hand-brake switch.



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Plan view of 55-pin control-unit plug

Continued on next picture page

Component/function:
Lead to Motronic control
unit term. 1

N>

* Operation:

	Position:
Prog.-selec. switch " V "	7
Prog.-selec. switch " Ω "	1
Test button	—

* Measuring equipment:

Motortester or multimeter

* Measuring range:

min. 15 V

* Connection:

Measuring socket, red (+)

Measuring socket, black (-)

* Operation in vehicle:

Ignition on.

* Set value:

10.3...15 V

* Operation in vehicle:

Ignition off.

* Set value:

< 0.5 V

Is measured value within
set-value tolerance?

* Trouble-shooting:

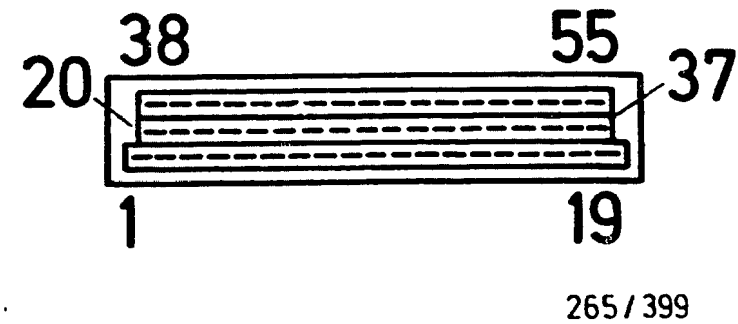
For testing, disconnect
controller plug from test
adapter.

Test following lead with
ohmmeter for continuity,
set value: 0 Ω :

* From controller plug
term. 38 to Motronic
control-unit plug term. 1 .

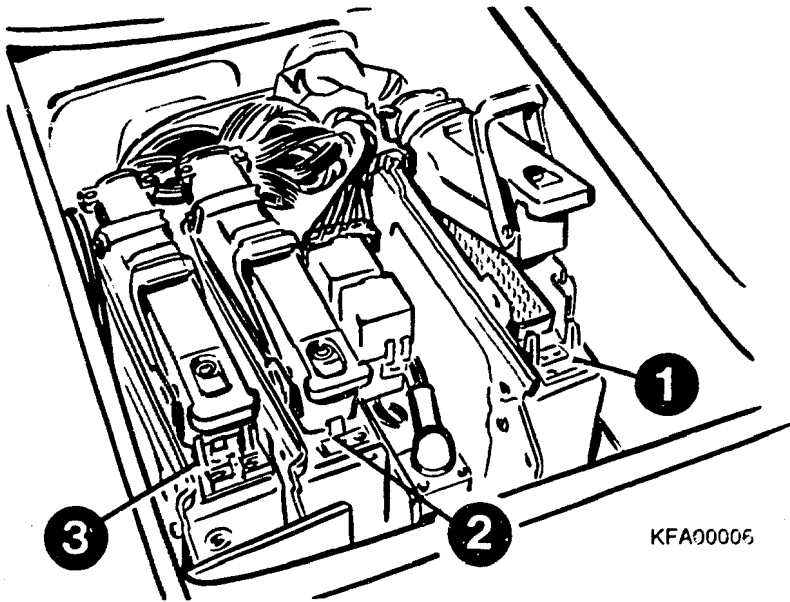
Eliminate open circuits/
contact resistances.

* Motronic control unit
defective: exchange.



Plan view of 55-pin control-unit plug

- 1 = ABS/ASR controller
- 2 = E Gas control unit
- 3 = Motronic control unit



Component/function:

Lead to E Gas control unit. Throttle-valve increase.

N>

* Operation:	Position:
Prog.-selec. switch " V "	8
Prog.-selec. switch " Ω "	1
Test button	—

* **Measuring equipment:**
Motortester or multimeter

* **Measuring range:**
min. 15 V

* **Connection:**
Measuring socket, red (+)
Measuring socket, black (-)

* **Operation in vehicle:**
Ignition off.

* **Set value:**
< 0.5 V

* **Operation in vehicle:**
Ignition on.

* **Set value:**
See brief instructions

Is measured value within
set value tolerance?

* **Trouble-shooting:**

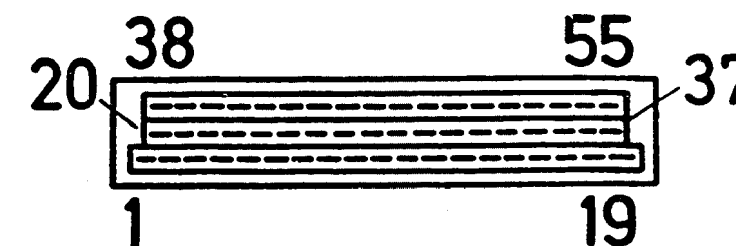
For testing, disconnect controller plug from test adapter.

Test following lead with ohmmeter for continuity, set value 0 Ω :

* From controller plug term. 48 to E Gas control-unit plug term. 35 .

Eliminate open circuits/contact resistances.

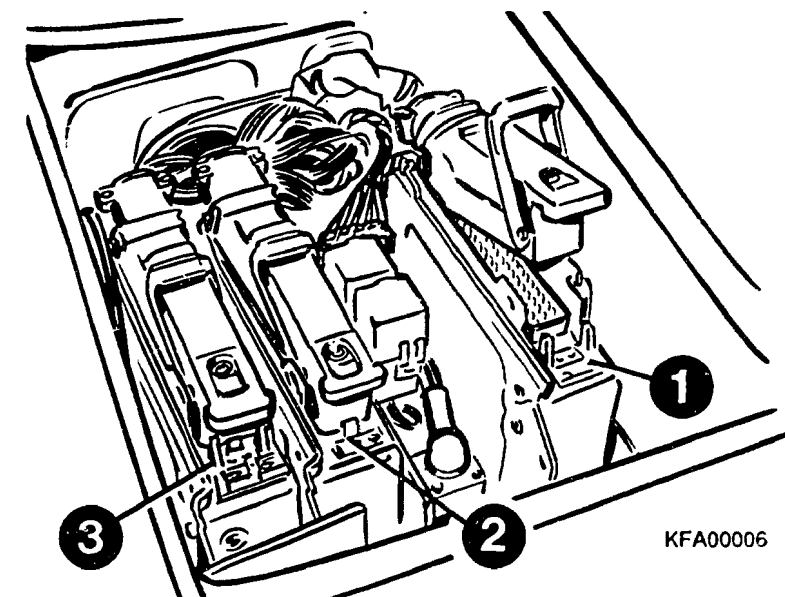
* E Gas control unit defective: exchange.



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Plan view of 55-pin control-unit plug

1 = ABS/ASR controller
2 = E Gas control unit
3 = Motronic control unit



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Continued on next picture page

Component/function:

Lead to E Gas control unit. Throttle-valve reduction.

N>

* Operation:	Position:
Prog.-selec. switch " V "	9
Prog.-selec. switch " Ω "	1
Test button	—

* **Measuring equipment:**
Motortester or multimeter

* **Measuring range:**
min. 15 V

* **Connection:**
Measuring socket, red (+)
Measuring socket, black (-)

* **Operation in vehicle:**
Ignition on.

* **Set value:**
See brief instructions

* **Operation in vehicle:**
Ignition off.

* **Set value:**
< 0.5 V

Is measured value within
set-value tolerance?

*** Trouble-shooting:**

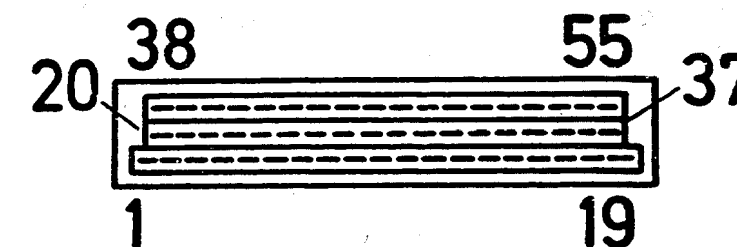
For testing, disconnect controller plug from test adapter.

Test following lead with ohmmeter for continuity, set value 0 Ω :

* From controller plug term. 46 to E Gas control-unit plug term. 34 .

Eliminate open circuits/contact resistances.

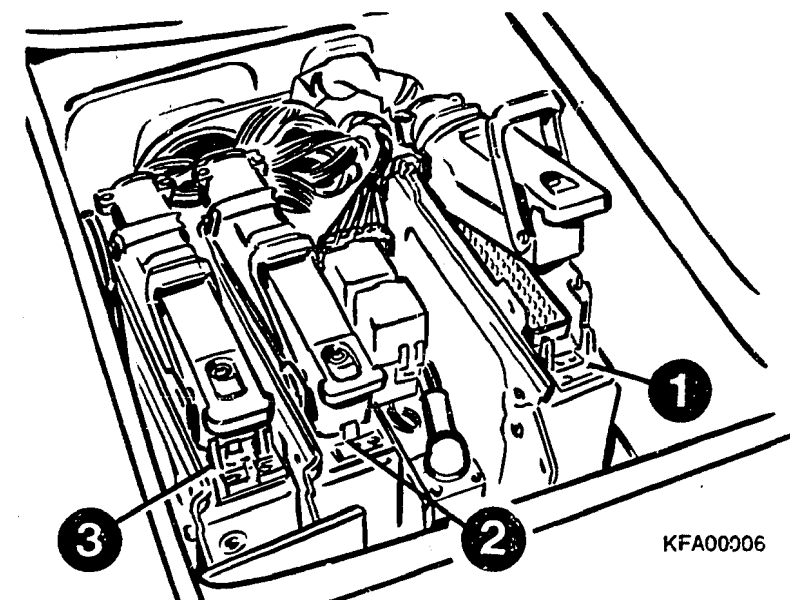
* E Gas control unit defective: exchange.



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Plan view of 55-pin control-unit plug

1 = ABS/ASR controller
2 = E Gas control unit
3 = Motronic control unit



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Continued on next picture page

Component/function:

Lead to E Gas control unit. Throttle-valve setting (actual value).

N>

*** Trouble-shooting:**

For testing, disconnect controller plug from test adapter.

Test following lead with ohmmeter for continuity, set value $0\ \Omega$:

- * From controller plug term. 43 to E Gas control-unit plug term. 13 .

Eliminate open circuits/contact resistances.

- * E Gas control unit defective: exchange.

* Operation:	Position:
Prog.select. switch " V "	10
Prog.-selec. switch " Ω "	1
Test button	—

*** Measuring equipment:**

Motortester or multimeter

*** Measuring range:**

min. 15 V

*** Connection:**

Measuring socket, red (+)
Measuring socket, black (-)

*** Operation in vehicle:**

Ignition off.

*** Set value:**

< 0.5 V

*** Operation in vehicle:**

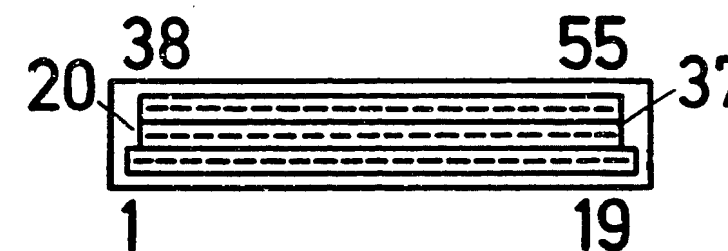
Ignition on.
Actuate accelerator pedal.

*** Set value:**

Voltage increases

Is measured value within set-value tolerance?

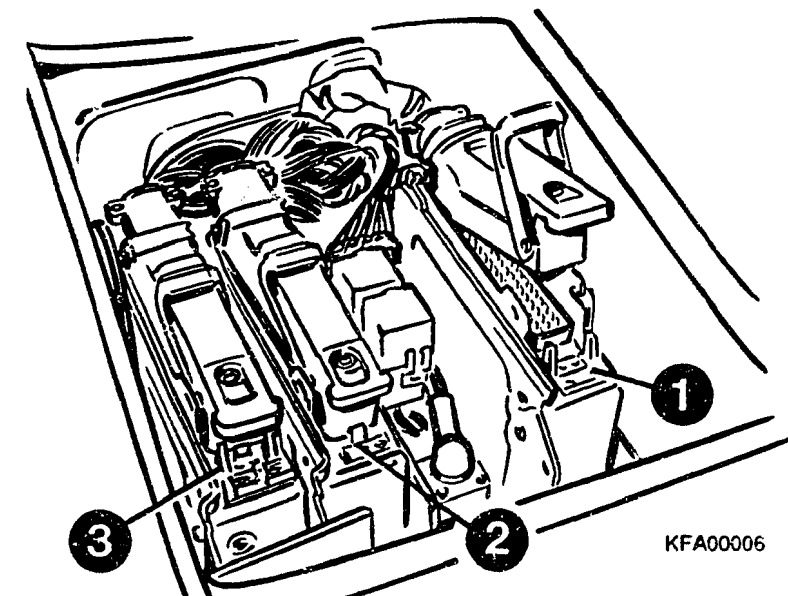
Continued on next picture page



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Plan view of 55-pin control-unit plug

- 1 = ABS/ASR controller
- 2 = E Gas control unit
- 3 = Motronic control unit



KFA00006

Component/function:

ASR nonlocking switch

N>

* Operation:	Position:
Prog.-selec. switch " V "	11
Prog.-selec. switch " Ω "	1
Test button	—

* Measuring equipment:
Motortester or multimeter

* Measuring range:
min. 15 V

* Connection:
Measuring socket, red (+)
Measuring socket, black (-)

* Operation in vehicle:
Ignition on.

* Set value:
< 0.5 V

* Operation in vehicle:
Ignition on.
Actuate ASR nonlocking switch.

* Set value:
10.3...15 V

Is measured value within
set-value tolerance?

* Trouble-shooting:

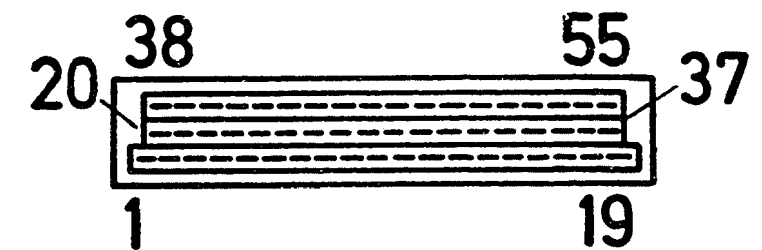
For testing, disconnect
controller plug from test
adapter.

Test following leads with
ohmmeter for continuity,
set value 0 Ω :

- * From controller plug
term. 54 to ASR nonlocking switch.
- * From overvoltage-protection
relay term. 87 to ASR non-
locking switch.

Eliminate open circuits/contact
resistances.

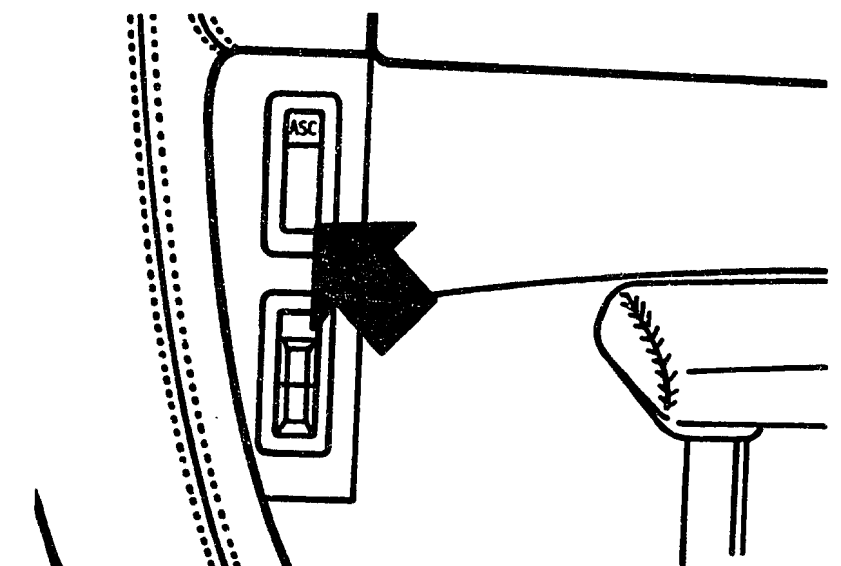
- * ASR nonlocking switch
defective: exchange.



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Plan view of 55-pin control-
unit plug

Arrow = ASR repeater lamp
and ASR nonlocking switch



KFA00010

Continued on next picture page

Component/function:

ASC repeater lamp

N>

* Operation:	Position:
Prog.-selec. switch " V "	11
Prog.-selec. switch " Ω "	1
Test button	2

* Measuring equipment:
none

* Measuring range:
—

* Connection:
—

* Operation in vehicle:
Ignition on.

* Set value:
ASC repeater lamp off

* Operation in vehicle:
Ignition on.
Actuate test button 2.

* Set value:
ASC repeater lamp
lights up.

Function of ASC repeater
lamp O.K.?

* Trouble-shooting:

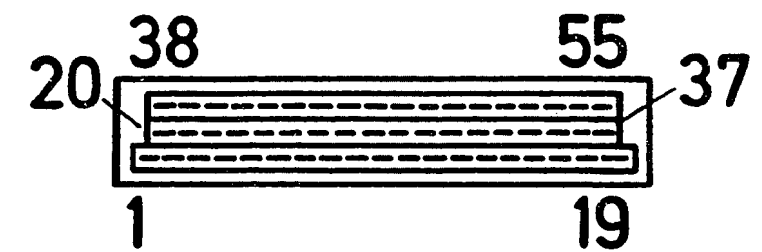
For testing, disconnect
controller plug from test
adapter.

Test following leads with
ohmmeter for continuity,
set value 0 Ω :

- * From controller plug
term. 51 to ASC repeater lamp
- * From overvoltage-protection
relay term. 87 to ASC repeater
lamp.

Eliminate open circuits/contact
resistances.

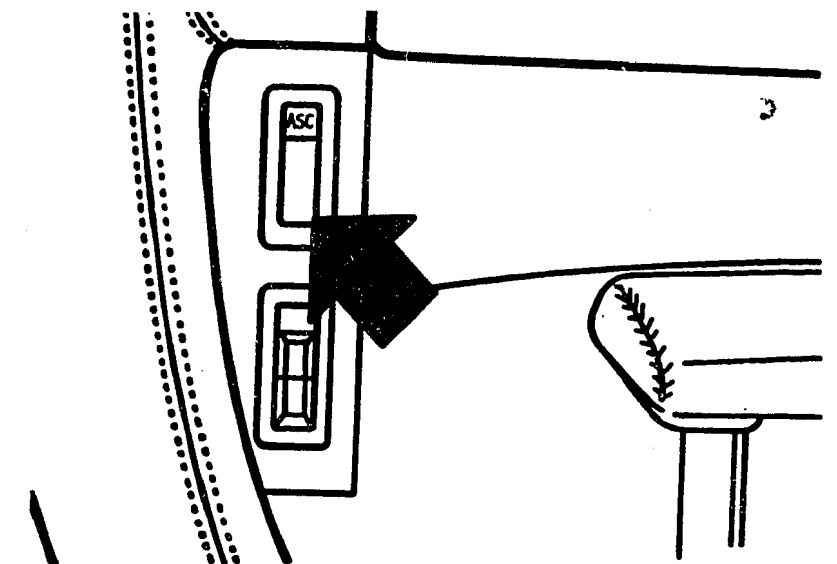
- * ASC repeater lamp defective:
exchange.



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Plan view of 55-pin control-
unit plug

Arrow = ASR repeater lamp
and ASR nonlocking switch



KFA00010

Continued on next picture page

Component/function:
Test check control indication for ASR.
(Testing not required with vehicles featuring modified lamp concept).

N>

* Operation:	Position:
Prog.-selec. switch " V "	11
Prog.-selec. switch " Ω "	1
Test button	1

* Measuring equipment:
none

* Measuring range:
—

* Connection:
—

* Operation in vehicle:
Run engine at idle speed.
Press push-button 1.

* Set value:
Watch check control indication:
"ASC defective" changes once with "Operating instructions".
Gong sounds.

Check control indication O.K.?

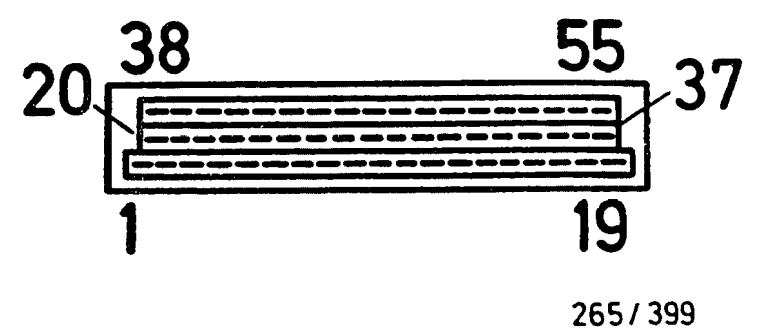
* Trouble-shooting:
For testing, disconnect controller plug from test adapter.

Test following leads with ohmmeter for continuity, set value 0 Ω :

* From controller plug term. 34 to check control term. 2 .

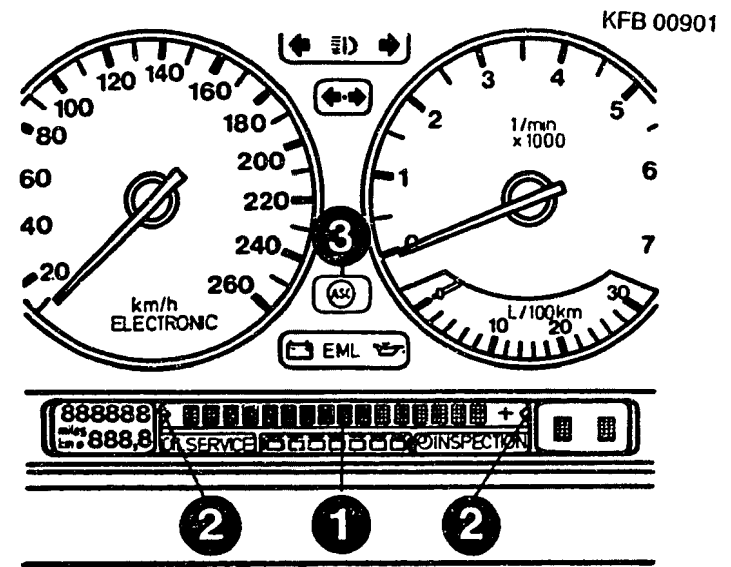
* From check control to driving switch term. 15.

Eliminate open circuits/contact resistances.



Plan view of 55-pin control-unit plug

- 1 = Check control indicator
- 2 = Indicator lamp
- 3 = ASR indicator lamp (as of approx. mid-1990)



Component/function:

Test check control indication for ASR.

(Testing not required with vehicles featuring modified lamp concept).

* Operation:	Position:
Prog.-selec. switch "V"	11
Prog.-selec. switch "Ω"	1
Test button	3

* Measuring equipment:
none

* Measuring range:
—

* Connection:
—

* Operation in vehicle:

Run engine at idle speed.
Press push-button 3.

* Set value:

Watch check control indication:
"ASC" is indicated.
Indicator lamps (triangles) flash.

Check control indication O.K.?

N>

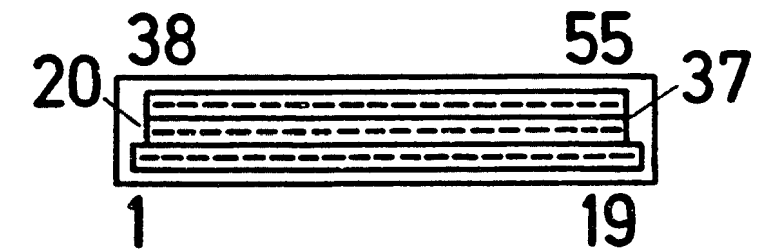
* Trouble-shooting:

For testing, disconnect controller plug from test adapter.

Test following leads with ohmmeter for continuity, set value 0 Ω :

- * From controller plug term. 53 to check control term. 4 .
- * From check control to overvoltage-protection relay term. 87 .

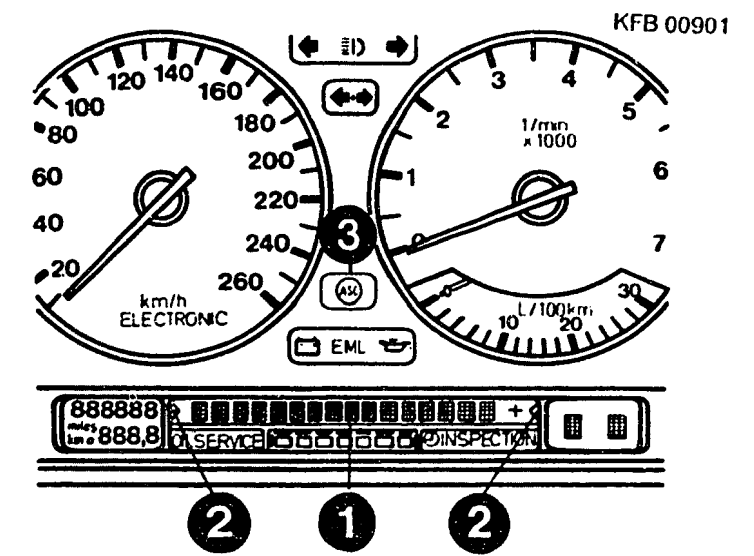
Eliminate open circuits/contact resistances.



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Plan view of 55-pin control-unit plug

- 1 = Check control indicator
- 2 = Indicator lamp
- 3 = ASR indicator lamp
(as of approx. mid-1990)



Continued on next picture page

Component/function:
Ignition masking by
Motronic.

N>

* Operation:	Position:
Prog.-selec. switch " V "	11
Prog.-selec. switch " Ω "	1
Test button	5

* **Measuring equipment:**
Motortester

* **Measuring range:**
engine speed

* **Connection:**
Ignition coil

* **Operation in vehicle:**
Run engine at 2000 min ⁻¹.
Hold accelerator-pedal
position constant. Actuate
push-button 5 for max. 1
second. Engine speed drops
briefly and increases again
after push-button 5 is
released.
Pay attention to note in
faults column.

* **Set value:**
Engine speed drops and increases
again to initial speed after
push-button 5 is released.

Does engine speed drop?

- * **Trouble-shooting:**
Repeat test step.
- * **Note:**
If push-button 5 is activated
for longer than 1 second, it is
possible to repeat the test
only after the ignition has
been switched off and on again.

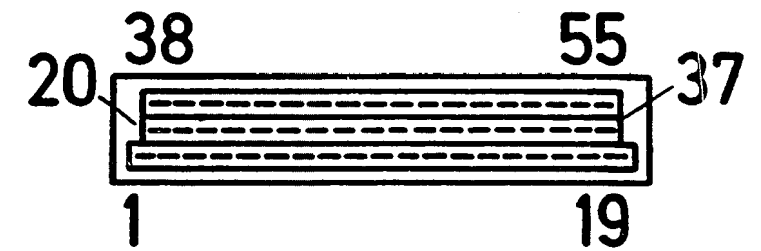
For testing, disconnect
controller plug from test
adapter.

Test following lead with
ohmmeter for continuity,
set value 0 Ω ;

- * From controller plug
term. 45 to Motronic
control-unit plug term. 38 .

Eliminate open circuits/contact
resistances.

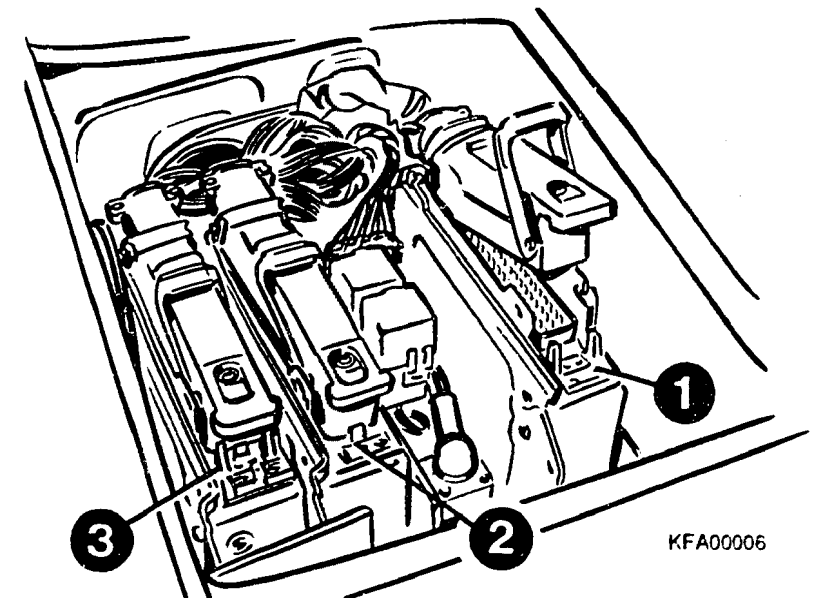
- * Motronic control unit
defective: exchange.



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Plan view of 55-pin control-
unit plug

- 1 = ABS/ASR controller
- 2 = E Gas control unit
- 3 = Motronic control unit



KFA00006

Continued on next picture page

Component/function:Spark-advance-angle
adjustment by Motronic

N>

* Operation:	Position:
Prog.-selec. switch " V "	11
Prog.-selec. switch " Ω "	1
Test button	6

* **Measuring equipment:**
Motortester* **Measuring range:**
engine speed* **Connection:**
Ignition coil

* **Operation in vehicle:**
Run engine at 2500 min⁻¹. Hold accelerator-pedal position constant. Actuate push-button 6 for approx. 2 seconds. Engine speed drops briefly and rises again after push-button 6 is released.

* **Set value:**
Engine speed drops and increases again to initial speed after push-button 6 is released.

Does engine speed drop?

Continued on next picture page

* **Trouble-shooting:**

Repeat test step.

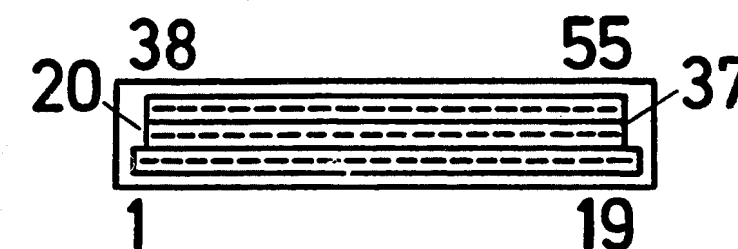
For testing, disconnect controller plug from test adapter.

Test following lead with ohmmeter for continuity, set value 0 Ω :

* From controller plug term. 47 to Motronic control-unit plug term. 50 .

Eliminate open circuits/contact resistances.

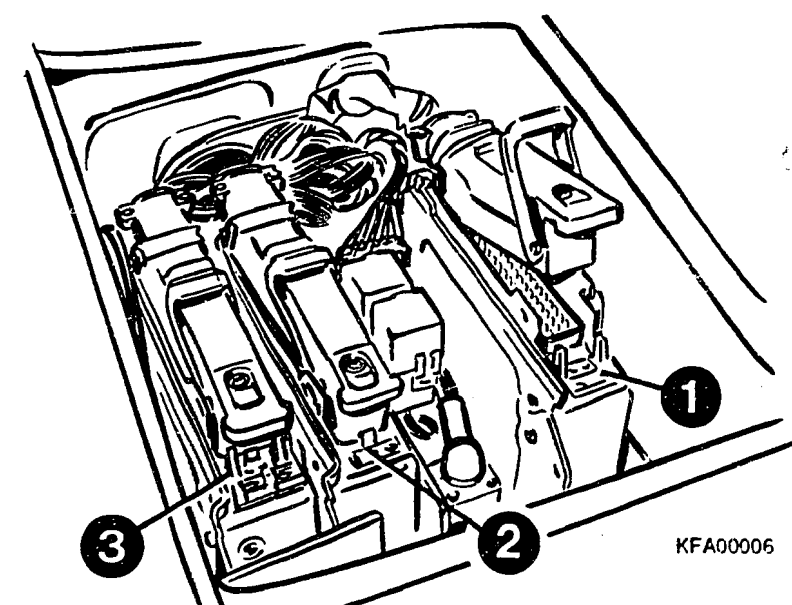
* Motronic control unit defective: exchange.



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Plan view of 55-pin control-unit plug

- 1 = ABS/ASR controller
2 = E Gas control unit
3 = Motronic control unit



KFA00006

Component/function:

Voltage supply for controller.
Constant positive at battery
for fault storage

N>

* Operation:	Position:
Prog.-selec. switch " V "	12
Prog.-selec. switch " Ω "	1
Test button	—

* Measuring equipment:

Motortester or multi-
meter

* Measuring range:

min. 15 V

* Connection:

Measuring socket, red (+)
Measuring socket, black (-)

* Operation in vehicle:

Ignition off

* Set value:

10.3...15 V

Is measured value within
set-value tolerance?

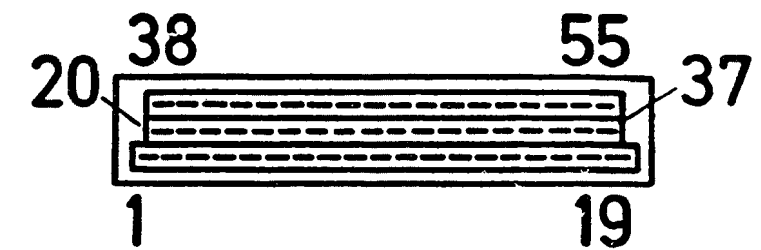
* Trouble-shooting:

For testing, disconnect
controller plug from test
adapter.

Test following lead with
ohmmeter for continuity,
set value 0 Ω ;

* From controller plug
term. 42 to battery
term. B+ .

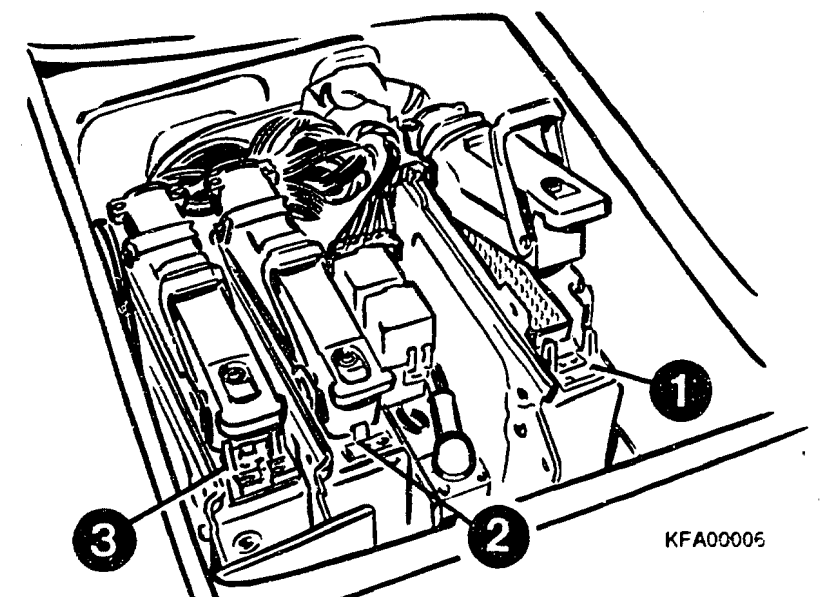
Eliminate open circuits/contact
resistances.



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Plan view of 55-pin control-
unit plug

- 1 = ABS/ASR controller
- 2 = E Gas control unit
- 3 = Motronic control unit



KFA00005

Continued on next picture page

Final test

Connect all control units.

Switch on ignition: ASR repeater lamp must light up. No indication by check control.

Start engine and run at high speed:
ASR repeater lamp continues to light up.
No indication by check control.

Vehicles with modified lamp concept:

Switch on ignition:
ABS warning lamp and ASR indicator lamp light.

Start engine and allow to idle:
ABS warning lamp and ASR indicator lamp goes out.

Take for a test drive:
Drive for at least 20 seconds at a speed exceeding 30 km/h and for 3 seconds at at least 50 km/h.
ASR repeater lamp must continue to light up.
No indication by check control.

Vehicles with modified lamp concept:
ABS warning lamp and ASR indicator lamp must no longer light.

For production reasons:
continued on the following
coordinate.

BMW 7 SERIES (E32)

Motor vehicle: Pass. car
12.1987

ANTISKID SYSTEM (ABS) WITH
ELECTRONIC TRACTION CONTROL (ASR)

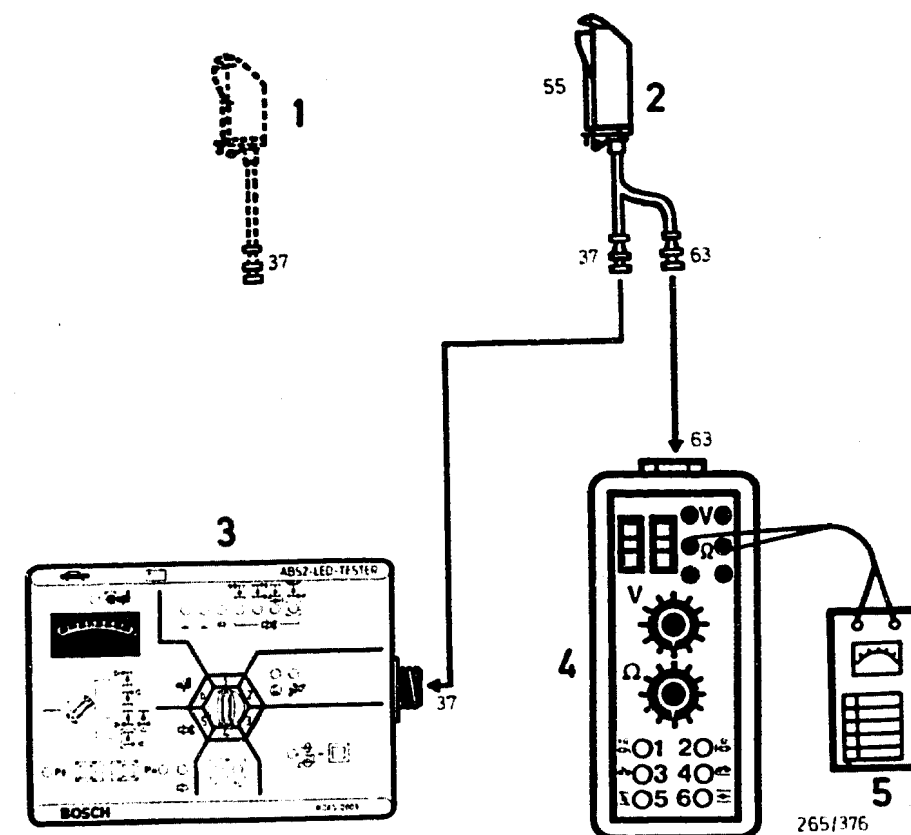
Procedure for after-sales service::

Since mid-1987, the BMW vehicles, model 735i with 3.43 l engine have been equipped with an electronic traction control system on the basis of ABS 2.

This ASR system with throttle-valve-control ignition action (DKZ) / engine-drag torque control (MSR) operates without brake intervention in conjunction with E Gas (electronic accelerator) and Motronic.

ABS/ASR DKZ/MSR is described in detail in the Service Information Sheet entitled "New Product".

The ABS components remain unchanged; only the ABS control unit is expanded by the ASR component.



- 1 = Test lead for ABS2 LED tester, 35-pin (is not required)
- 2 = Test lead for ABS/ASR, 55-pin
- 3 = ABS2 LED tester (tests ABS2 part)
- 4 = Universal test adapter (tests ASR part)
- 5 = Multimeter

Testers ABS/ASR - DKZ/MSR

In addition to the ABS tester KDAS 0003, the following testers are required for testing the ASR:

- Universal test adapter
Part No. 0 684 101 801
- Test lead
- Multimeter

The necessary test lead is expected to be available as of spring 1988. Until it is delivered as standard, the test lead with provisional test instructions may, if required, be requested from

Reinhold Mack GmbH & Co
Jahnstr. 144
D-7320 Göppingen
Tel. 07161/78051
Telex 727865 mackd.

The fact that the ABS/ASR system is an item of safety equipment forbids the use of any method of makeshift trouble-shooting.

Technical Documents

Testing/Repairing	SIS-KFz ...
Equipment	AP ...
Specifications	KE ...
Exchange	Exchange list
Product/Application	GD ...

Warranty procedure

Components on which a claim is being made should be sent for inspection during the warranty period to:

In the Federal Republic of Germany:

Robert Bosch GmbH
K1/VAK
Robert-Bosch-Straße
D-7141 Schwieberdingen

together with warranty application, goodwill application and delivery note KH/VKD3.

In all other countries, components on which a claim is being made should be sent to our representative in your country who should forward it to:

Robert Bosch GmbH
KH/LAV - Auspackraum
zur Weiterleitung an K1/VAK
Auf der Breit 4
D-7500 Karlsruhe 41

together with warranty application, goodwill application and delivery note.

Published by:

ROBERT BOSCH GMBH
Division KH
Technical After-Sales Service (KH/VKD 2)

Please direct questions and comments concerning the contents to our authorized representative in your country.

	Coordinates
ASR check control indicator	B01
ASR repeater lamp	B01
ASR non-locking switch	B02
Self-diagnosis (flashing code)	B07
Controller	B14
Universal test adapter	A07 / B04

Section	Coordinates
Structure of microcard.....	A01
How to use the microcard.....	A02
Special features.....	A03
Safety and precautionary measures.....	A04
Test equipment and tools.....	A06
How to use the test adapter.....	A07
Installation position of components.....	A09
ASR repeater lamp, ASR nonlocking switch.....	B01
Test procedure.....	B03
Test requirements.....	B04
How to use the self-diagnosis and self-diagnosis test table.....	B05
Activating the self-diagnosis.....	B07
Self-diagnosis test table.....	B11
How to use the test chart for universal test adapter.....	B13
Test chart for universal test adapter.....	B17
Technical Bulletins.....	N01

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